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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/665,496	09/22/2003	Zhiqiang Wei	0020-5179P	6865

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EXAMINER	
CLEVELAND, MICHAEL B	
ART UNIT	**PAPER NUMBER**
1762	

DATE MAILED: 01/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/665,496	WEI ET AL.	
	Examiner	Art Unit	
	Michael Cleveland	1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 October 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) *7-12* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6 and 13-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Claims 7-12 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 3/28/2005.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 20 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 20 recites the limitation "the stainless steel container" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. 1-3, 5, 13, and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Qiu et al. (U.S. Patent 6,419,849, hereafter '849).

'849 teaches a method for preparing a thin film of metal oxide containing one or more metal elements on a substrate comprising the steps of:

applying a sol-gel solution containing one or more metal elements, such as lead and barium (col. 9, lines 13-17; col. 16, lines 1-8) to a surface of said substrate (col. 9, lines 7-50);

drying said sol-gel solution to prepare a dried gel film on said substrate (col. 9, lines 51-67);

soaking said dried gel film on said substrate in an alkaline aqueous solution containing barium (col. 10, lines 9-22) or lead (col. 10, lines 51-64) in a container;

sealing the container (The container must be sealed in order to achieve desired superatmospheric pressures (col. 10, lines 23-64).); and

performing hydrothermal treatment for said dried gel film on said substrate in the sealed container to prepare said thin film of metal oxide on said substrate (col. 10, lines 9-64).

Claims 2-3: The temperature may be 140 °C (col. 10, lines 27-28).

Claim 5: The metal may be lanthanum (Fig. 7).

Claim 13: The steps may be repeated a plurality of times (col. 9, lines 63-67; col. 10, lines 9-64).

Claim 15: Water tank (7) is heated externally by an autoclave (col. 10, lines 9-22).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Qiu '849.

'849 is discussed above, but does not explicitly teach that the hydrothermal treatment is at 15 atm. However, it does teach 2-20 atm (col. 4, lines 49-51). The subject matter as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made to have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a *prima facie* case of obviousness, see *In re Malagari*, 182 U.S.P.Q. 549.

9. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Qiu '849, as applied to claim 1, above, and further in view of Lee et al. (U.S. Patent 5,763,092, hereafter '092).

'849 is discussed above, but does not explicitly teach boiling the alkaline aqueous solution before soaking. '849 teaches that its hydrothermal process occurs to replace atoms in the structural lattice with other desired atoms (col. 3, lines 26-61) in order to obtain a particularly desired (perovskite) crystal structure. However, '092 teaches that hydrothermal treatment solutions used to treat oxide films may be boiled in order to avoid the undesirable incorporation of carbon into the films (col. 5, lines 40-59). Therefore, taking the references as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have boiled the hydrothermal treatment solution of '849 before immersing the substrate in order to have avoided the incorporation of carbon into the oxide film of '849 because '849 does not desire carbon in the film.

10. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Qiu '849, as applied to claim 1, above, and further in view of Yonezawa et al. (U.S. Patent 3,963,630, hereafter '630).

'849 is discussed above, but does not explicitly teach that the autoclave is steel However, '630 teaches that stainless steel is an operative material for forming autoclaves for performing hydrothermal treatment of metal oxides (col. 3, lines 47-50). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used stainless steel as the autoclave material with a reasonable expectation of success and with the expectation of similar results because stainless steel is known as a suitable material for forming

autoclaves for performing hydrothermal treatment of metal oxides. The selection of something based on its known suitability for its intended use has been held to support a *prima facie* case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

11. Claims 16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Qiu '849, as applied to claim 1, above, and further in view of Ishizawa et al. (*Jpn. J. Appl. Phys.*, **29**, pp. 2467-2472, hereafter Ishizawa).

'849 is discussed above, but does not explicitly teach equipping the autoclave with a thermocouple, nor a beaker with a removable lid. However, Ishizawa teaches an appropriate apparatus for performing hydrothermal treatments on metal oxides which use an autoclave containing a Teflon beaker (C) and a thermocouple (A) (Fig. 2). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used such an apparatus as the particular apparatus of '849 with a reasonable expectation of success because Ishizawa teaches that it is an appropriate autoclave for performing hydrothermal treatments on metal oxides. The Examiner takes Official Notice that it is well known to provide removable lids for beakers in order to provide the ability to protect solutions in the beaker from contamination or to prevent spills from the beaker. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided a removable lid for the beaker of Ishizawa in order to have provided the ability to protect solutions in the beaker from contamination or to prevent spills from the beaker.

12. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Qiu '849, as applied to claim 1, above, and further in view of Borodin et al. (U.S. Patent 5,069,744, hereafter '744).

'849 is discussed above, but does not explicitly teach that the autoclave is steel nor that it is equipped with a leak tube. However, '744 teaches that a leak tube may be provided in a hydrothermal autoclave for treating metal oxides in order to protect the walls of the autoclave from corrosion and the solution from contamination (col. 4, lines 11-26). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have

provided a leak tube in the autoclave of '849 to have minimized corrosion of the autoclave walls while protecting the solution from contamination.

13. Claims 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Qiu '849, as applied to claim 1, above, and further in view of Naito et al. (U.S. Patent 5,790,368, hereafter '368).

'849 is discussed above, but does not explicitly teach equipping the autoclave with a beaker with a removable lid and a substrate holder in the beaker. However, '368 teaches an appropriate apparatus for performing hydrothermal treatments on metal oxides which use an autoclave containing a fluororesin beaker and a substrate holder (Fig. 3). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used such an apparatus as the particular apparatus of '849 with a reasonable expectation of success because '368 teaches that it is an appropriate autoclave for performing hydrothermal treatments on metal oxides. The Examiner takes Official Notice that it is well known to provide removable lids for beakers in order to provide the ability to protect solutions in the beaker from contamination or to prevent spills from the beaker. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided a removable lid for the beaker of Ishizawa in order to have provided the ability to protect solutions in the beaker from contamination or to prevent spills from the beaker.

14. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Qiu '849 in view of Ishizawa, as applied to claim 18, above, and further in view of Yonezawa '630.
'849 Ishizawa teaches that the beaker is surrounded by redistilled water (B). The emphasis on purity indicates to one of ordinary skill in the art that ions would not have been desired. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used deionized water as the redistilled water to have provided such purity. '630 renders the use of a stainless stee autoclave obvious for substanially the same reasons given regarding claim 14 above.

Response to Arguments

15. Applicant's arguments filed 10/25/005 have been fully considered but they are not persuasive.

Applicant argues that Qiu does not teach a thin film containing one metal element. The argument is unconvincing because Applicant explicitly admists at the top of p. 11 that it teaches a divalent metal element, such as Pb. Pb is one metal element. It appears that Applicant may be assuming that the claim requires that the film contain *only* one metal element. However, the word "containing" is not recognized as necessarily limiting a claim. Therefore, such a limitation is not expressly stated in the claim, and the claim must be interpreted as requiring *at least* one metal element.

Applicant's arguments regarding the new dependent claims are unconvincing in view of the newly cited art.

Conclusion

16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Cleveland whose telephone number is (571) 272-1418. The examiner can normally be reached on Monday-Thursday, 7-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michael Cleveland
Primary Examiner
Art Unit 1762

6/4/2005